

Appl. No. 10/648,937

Amdt. Dated September 19, 2005

Reply to Office Action of August 24, 2005

**REMARKS**

This is a full and timely response to the non-final Office action mailed August 24, 2005. Reexamination and reconsideration in view of the foregoing amendments and following remarks is respectfully solicited.

Claims 1-29 are now pending in this application. Claims 1, 8, 9, 11, 14, 19, and 25 being the independent claims. Claims 1-7 and 19-24 have been withdrawn from consideration. Claims 8-18, 25-27 and 29 have been rejected. Claims 8-11, 13-17, and 28 have been objected to. Claims 8, 9, 11, 14, and 25 have been amended to more particularly claim the invention. Claims 8-11, and 13-17 have been amended to overcome the objections. Claim 28 has not been amended and the patentability of the base claims is instead argued below. No new matter is believed to have been added.

**OBJECTIONS**

The Examiner has objected to Claims 8-11 and 13-17 for various informalities. The Applicants in response have amended Claims 8-11 and 13-17 to overcome the objections as per the Examiner's suggestions.

**REJECTION UNDER 35. U.S.C. §103**

Claims 8-18, 25-27, and 29 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,341,485 (Liebe) in view of U.S. Patent No. 2,446,059 (Peterson).

These rejections are respectfully traversed, at least in light of the above claim amendments. Although the Applicant disagrees with the Examiner's allegation of obviousness, for the purposes of expediting the prosecution of this application, the Applicant has amended Claims 8, 9, 11, 14, and 25 to more particularly claim the invention. The Applicant has amended the claims to define the positioning of the first

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end of the cooling tube(s) as being located proximate the exhaust (rear) end of the combustor chamber and the second end of the cooling tube(s) as being located proximate the intake (front) end of the combustor chamber. The Applicant believes that these amendments place the claims in a condition for allowance. The dependent Claims 10, 12-13, 15-18 and 26-29, depending therefrom respectively, are also submitted to be patentable for the reasons given above with respect to the independent claim from which each depends, and because each recites features which are patentable in its own right.

Liebe (U.S. Pat. No. 6341,485)

Liebe discloses a combustion chamber including a wall structure having an inner wall forming an internal space through which combustion gasses flow from a chamber inlet to a chamber outlet. The combustion chamber further includes an outer wall, wherein the inner wall and the outer wall define an envelope therebetween. An intermediate wall is disposed in the envelope and defines dual cooling spaces, namely an inner cooling space and an outer cooling space. A cooling fluid inlet in the outer cooling space is located proximate the combustion chamber inlet, and a cooling fluid outlet in the inner cooling space is also located proximate the combustion chamber inlet. The two cooling spaces in Liebe are defined by the intermediate wall and thus can be said to be rigidly attached to each other. This rigid attachment will generate stresses dependent on the temperature difference between the two cooling spaces. One cooling space is exposed to the hot combustion gasses and the second to a much cooler cooling fluid. Thus one space and its defining wall(s) is much hotter than the other and has a much higher thermal growth than the other. The Applicants alleviate the stress issue by providing the cooling with essentially only one space and that the serpentine in the tube relieves the stresses because it has waves to absorb the thermal growth.

Liebe further discloses the intermediate wall as including a plurality of orifices for permitting the flow of cooling fluid therethrough for impact cooling said inner wall. As described in Liebe, the flow of gas through inner and outer cooling spaces begins at the

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chamber inlet and ends at the chamber inlet having been directed as such through the cooling space configuration and by the passage of gas from the outer cooling space to the inner cooling space through the plurality of orifices formed in the intermediate wall.

In contrast to Liebe, the Applicants' now claimed combustion chamber includes a cooling tube or cooling tubes, each having a first end and a second end, wherein said first end is located proximate the exhaust (rear) end of the combustion chamber (the chamber outlet in Liebe) and said second end is located proximate the intake (front) end of the combustion chamber (the chamber inlet in Liebe). More specifically, the Applicants inventive cooling tube design provides for the first end and second end to be positioned at opposite ends of the combustion chamber, and having a one-way flow of the cooling fluid (air) therethrough. More particularly, the flow of air, in contrast to the gas flow in Liebe, is counter to the flow of a hot gas stream through the combustion chamber. There is no inclusion in the Applicants device of a dual cooling space structure including a rigid structure that is not able to withstand thermal growth. The Applicants device includes the serpentine of the single cooling space to relieve the stresses because it has waves to absorb the thermal growth.

The Applicant asserts that the mere substitution of air into the design of Liebe in lieu of the preferred cooling gas, fails to make obvious the Applicants now claimed uni-directional flow of air through the cooling tube(s).

Therefore, since Claims 8, 9, 11, 14, and 25 each contain the same limitation and since that limitation is not taught, disclosed, shown, or made obvious in light of the teaching of Liebe in view of Peterson, a 35 U.S.C. §103 cannot be maintained. Accordingly, the Applicant believes that Claims 8, 9, 11, 14, and 25 as amended should be allowable. Since Claim 10 is dependent upon Claim 9, Claims 12 and 13 are dependent upon Claim 11, Claims 15-18 are dependent upon Claim 14 and Claims 26-29 are dependent upon Claim 25, then Claims 10, 12, 13, 15-18, and 26-29 should also be

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allowable if Claims 8, 9, 11, 14 and 25 are allowable.

Therefore, based on the above-presented arguments, the Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. §103.

### Conclusion

Based on the above, independent Claims 8, 9, 11, 14, and 25 are patentable over the citations of record. The dependent claims are also submitted to be patentable for the reasons given above with respect to the independent claims and because each recite features which are patentable in its own right. Individual consideration of the dependent claims is respectfully solicited

Hence, Applicant submits that the present application is in condition for allowance. Favorable reconsideration and withdrawal of the objections and rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

If for some reason Applicant has not paid a sufficient fee for this response, please consider this as authorization to charge Ingrassia, Fisher & Lorenz, Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

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